REMARKS/ARGUMENTS

Claims 1 and 21 have been similarly amended with the incorporation therein of the features of former claims 11 and 37, respectively. Claims 11 and 37 have therefore been cancelled without prejudice.

Furthermore, claim 1 has been amended by replacing the expression "chamber housing" with "primary vessel having", for greater clarity.

The dependencies have been amended in claims 12, 38, 39 and 41.

The rejection of claims 1-7, 9-34 and 37-58 is that they do not meet the requirements of 35 U.S.C. 102(b) or 35 U.S.C. 103(a), as allegedly being anticipated by, or in the alternative as obvious over, GB 2,083,370 (henceforth '370). The Applicant respectfully requests reconsideration.

The claims on file are now directed more clearly to a method and apparatus permitting the separation of non-aqueous emulsions having a droplet size of at least 0.5μm. Furthermore, both the method and the apparatus occur in a primary vessel having a plurality of coalescing compartments.

Conversely, GB 2,083,730 teaches a method and apparatus for oil-water separation which uses a series of vessels interconnected by piping and requires that the oil water separating element includes a specific porous material. Importantly, this porous material must include "a water-insoluble hydrous gel layer formed on at least one of the porous material surfaces to be in contact with an oil containing water and/or to the liquid passage surface", (page 1, lines 100 to 104 of '370).

Five exemplary methods of forming the hydrousgel are described in '370 and the means of application onto the porous material are described. The need for a hydrousgel is neither taught nor suggested in the present application.

In the '370 process, the coalesced oil must be removed after each coalescing step. In the application of the present invention, there is no such requirement, and in fact the coalesced oil is collected only after passage through the final coalescing compartment.

Furthermore, the '370 professes to separate particles less then 10 μm. The person of ordinary skill in the art would understand that "less that 10 μm" is very different from the separation of particles close to 0 μm, in size. Furthermore, if the '370 application could trap particles substantially less than 10 μm, the '370 application would have suggested that it could. Therefore, less than 10 μm is likely to be interpreted as trapping particles of approximately 10 μm. Therefore the applicant respectfully submits that there is no suggestion in '370 that particles of at least 0.5 μm can be coalesced, or in other words that droplets up to 20 times smaller than those suggested in '370 can be separated. It is important to realize that the separation of oil droplets in water is governed by Stokes' Law, where the rising velocity of the droplet is a function of the square of its diameter. Therefore it is understood that the rising velocity, an important parameter of separation, is 400 times smaller for particles of at least 0.5μm, therefore making the separation of smaller droplets significantly more difficult. This feature of coalescing emulsions of at "least 0.5μm" is included in amended claims 1 and 21 for greater clarity. Thus the present application attains a separation efficiency that is significantly superior than the '370 reference, and that, without requiring the use of a hydrousgel on the coalescing media.

Finally, the '370 application uses multiple smaller coalescing vessels to achieve one of the objectives of the '370 application, which is to keep the equipment small and meet the requirement that "No practical small-sized equipment for economically performing separation-by-granulation in the range of oil matters with smaller than 10μm particles is available at this time". (page 1, lines 53-57, of '370)

Contrary to this, the present invention teaches a larger single vessel including a plurality of coalescing compartments and thus the '370 reference teaches away from the preset invention. Within the compartments of the present invention are found a substantially homogenous porous mass including a network of fine filaments wherein the coalescing medium can separate non-aqueous emulsions from the aqueous phase having a droplet diameter of at least 0.5 μm, and that without any hydrousgel as required by the '370 reference.

Therefore, the Applicant respectfully submits that GB 2,083,370 reference does not teach the novel features of a single vessel having a plurality of compartments including a porous mass of non-treated material capturing droplets of at least 0.5μm. It is respectfully submitted that GB 2,083,370 fails to anticipate the present invention, as claimed and thus the present application complies with the requirements of 35 U.S.C. 102(b). Reconsideration of the rejection in this regard is therefore anticipated.

With respect to the rejection under 35 U.S.C. 103(a), the United States Supreme Court in *KSR International Co. v. Teleflex Inc. Et. Al.*, reviewed the Principles of Obviousness. The Supreme Court re-affirmed that the framework for determining obviousness was to be established by a person of ordinary skill in the art, and as substantially set forth in *Graham v. John Deere Co.*, but

insisted that the teaching-suggestion-motivation test [TSM] defined in *Graham* must not be applied in an overly rigid or formalistic way.

The Supreme court further affirmed the principle set out in the case of *United States v. Adams,* 383 U.S. 39, 40 (1966) that "when the prior art teaches away from combining certain elements, discovery of a successful means of combining them is more likely to be non-obvious."

Therefore, when considering whether a person of ordinary skill in the art would find a combination of known elements obvious, the Supreme Court ruled that "The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results". The Applicant respectfully submits that the present invention produces an improvement that is FAR more than a predictable a result, and is therefore non-obvious.

GB 2,083,370 teaches a plurality of vessels each having a coalescing media for separating oil and water emulsions. '370 teaches that the coalescing media be treated to produce a hydrousgel and that clarified oil be removed after each coalescing step. As previously stated, one of the main objectives of the '370 reference (at page 1, lines 53-57) is to produce a small size apparatus.

The present application clearly teaches the use of a larger single vessel including a plurality of coalescing compartments in which is placed a coalescing media of a substantially homogenous porous mass. This homogenous porous mass is NOT treated and does not require any so-called hydrousgel, as taught in the '370 reference. Furthermore and surprisingly, the present application is capable of separating oil and water particles of at least 0.5μm. No such teaching is found in the '370 reference. Therefore, the Applicant submits that this improvement result is not predictable. Without a

treatment of polymeric material required in '370, the present application arrives at a superior separation not disclosed in the '370 reference and in a simple large scale unit. The present invention simplifies the design of the apparatus by reducing interconnecting piping and valve requirements found in the '370 reference. As such, the '370 teaches away from the present application, and does not motivate the person of ordinary skill to make larger equipment without a hydrousgel on the coalescing media.

The person of ordinary skill would further understand that the '370 reference could not separate all emulsions below 10μm and that separation of particles that are at least 0.5μm is a significant increase in efficiency of separation which is governed by Stokes' Law. Stokes' Law stipulates the separation of oil and water is established by the rising velocity of an oil particle which is a function of the square of its diameter. Therefore, because the present invention removes oil droplets approximately 20 times smaller than 10μm oil droplets, the rising velocity of the emulsions trapped by the present invention is may be as much as (20 x 20 =) 400 times smaller than the oil droplet having 10 microns in size. Therefore, the potential improvement in efficiency achieved by the present invention may be as much as two orders of magnitude greater than that of the '370 reference.

The Applicant respectfully reiterates that the cited '370 reference teaches away from the claims presently on file and that the claimed invention clearly produces an efficiency of separation of oil droplets that is not predictable. As such, the Applicant submits that the claims on file meet all the requirements under 35 U.S.C. 103(a) and are not rendered obvious by GB 2,083,370. We respectfully request reconsideration.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully,

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Date

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